DEPARTMENT of ENVIRONMENTAL SERVICES
Water Supply & Pollution Control Division - Biology Bureau

LAKE TROPHIC DATA

MORPHOMETRIC:

Lake:	CLEMENT POND	Lake Area (ha):	48.04
Town:	HOPKINTON	Maximum depth (m):	15.5
County:	Merrimack	Mean depth (m):	6.6
River Basin:	Merrimack	Volume (m^3):	3153500
Latitude:	43°13'00" N	Relative depth:	2.0
Longitude:	71°46'05" W	Shore configuration:	1.30
Elevation (ft):	417	Areal water load (m/yr):	5.89
Shore length (m):	3200	Flushing rate (yr^{-1}):	0.90
Watershed area (ha):	619.0	P retention coeff.:	0.63
% watershed ponded:	4.4	Lake type:	natural w/dam

BIOLOGICAL:		24 January 1991	25 June 1990
DOM. PHYTOPLANKTON (% TOTAL)	#1	ASTERIONELLA 55%	APHANIZOMENON 70%
	#2	APHANIZOMENON 20%	TABELLARIA 30%
	#3		
PHYTOPLANKTON ABUNDANCE (cells/mL)			1630.0
CHLOROPHYLL-A (µg/L)			4.74
DOM. ZOOPLANKTON (% TOTAL)	#1	NAUPLIUS LARVA 35%	POLYARTHRA 33%
	#2	POLYARTHRA 24%	NAUPLIUS LARVA 22%
	#3	KELLICOTTIA 19%	
ROTIFERS/LITER		72	87
MICROCRUSTACEA/LITER		52	81
ZOOPLANKTON ABUNDANCE (#/L)		124	168
VASCULAR PLANT ABUNDANCE			Scattered
SECCHI DISK TRANSPARENCY (m)			3.3
BOTTOM DISSOLVED OXYGEN (mg/L)		9.2	0.7
BACTERIA (fecal col., #/100 ml)	#1		16
	#2		2
	#3		

SUMMER THERMAL STRATIFICATION:

stratified

Depth of thermocline (m): 3.0
Hypolimnion volume (m^3) : 1175000
Anoxic volume (m^3) : 76500

CHEMICAL:

Lake: CLEMENT POND
Town: HOPKINTON

	24 January 1991		25 June 1990		
DEPTH (m)	4.0	8.0	1.0	4.5	10.0
pH (units)	6.7	6.5	6.9	6.8	
A.N.C. (Alkalinity)	9.6	9.8	8.8	9.6	
NITRATE NITROGEN	< 0.05	< 0.05	< 0.05		< 0.05
TOTAL KJELDAHL NITROGEN	0.30	0.24	0.37	0.39	0.42
TOTAL PHOSPHORUS	0.012	0.008	0.008	0.014	0.009
CONDUCTIVITY (μmhos/cm)	39.4	40.8	35.5	36.6	
APPARENT COLOR (cpu)	27	28	23	23	24
MAGNESIUM			0.62		
CALCIUM			3.2		
SODIUM			2.3		
POTASSIUM			0.80		
CHLORIDE	2	2	2		2
SULFATE	3	3	3		3
TN : TP	25	30	46		47
CALCITE SATURATION INDEX			3.0		

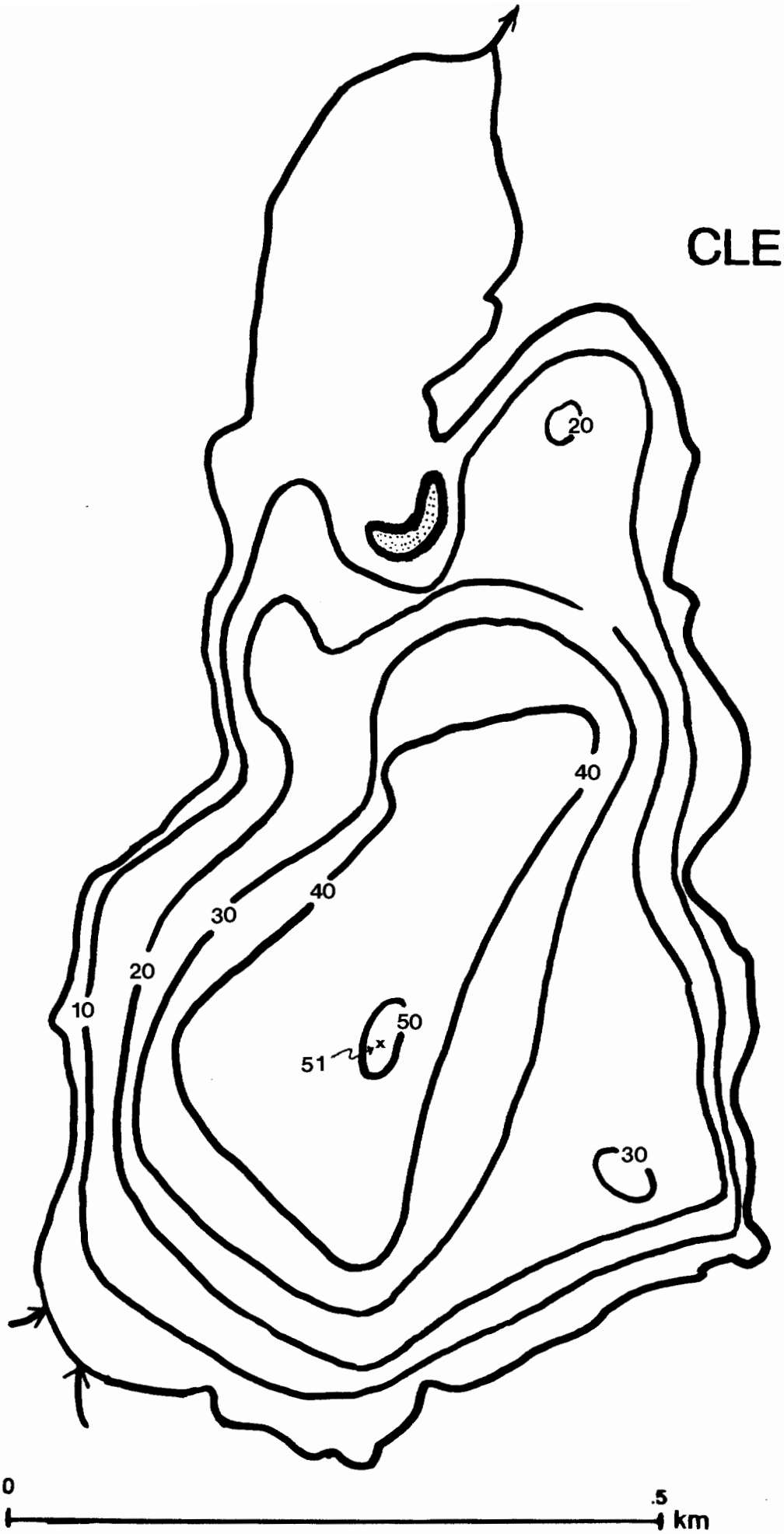
All results in mg/L unless indicated otherwise

TROPHIC CLASSIFICATION: 1990

D.O.	S.D.	PLANT	CHL	TOTAL	CLASS
5	2	1	1	9	Meso.

COMMENTS:

1. Also known as Josylvia Pond and Joe Silver Lake.
2. This pond was previously surveyed in 1979. Although there was little change in water quality, the trophic state changed from eutrophic to mesotrophic. The lake is borderline mesotrophic/eutrophic, although it has algae blooms similar to eutrophic lakes.
3. The pond suffers from periodic blooms of blue-green algae. Aphanizomenon was dominant during both the winter and summer surveys, and has bloomed under the ice.
4. A boat launch site and a juvenile camp were present along the shore.
5. Gypsy moth damage in the area was very evident.
6. Dominant wholewater phytoplankton genera were Chroomonas (60%) and Anabaena (20%).



CLEMENT POND

HOPKINTON

Rough Bathymetric Chart
DES - 1990
Sounded by Fathometer

N

10 ft. depth contours

FIELD DATA SHEET

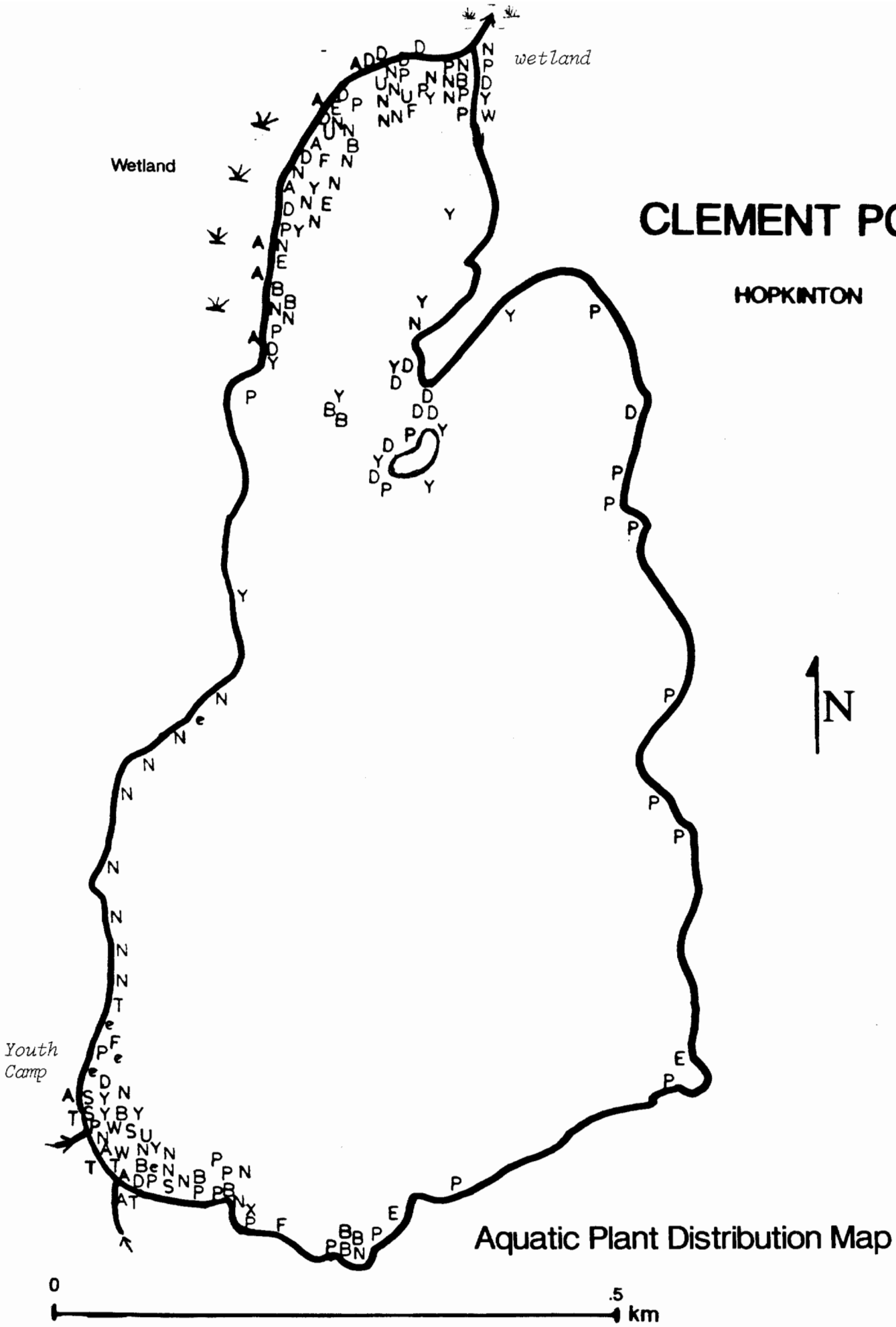
LAKE: CLEMENT POND
TOWN: HOPKINTON
DATE: 06/25/90
WEATHER: PARTLY SUNNY; WARM

	DEPTH (M)	TEMP (°C)	*DISSOLVED OXYGEN	OXYGEN SATURATION
	0.1	23.0	8.5	98 %
	1.0	23.0	8.4	97 %
	2.0	21.5	8.0	90 %
	3.0	16.5	10.6	106 %
	4.0	13.0	10.2	96 %
	5.0	9.4	6.4	55 %
	6.0	7.2	3.7	30 %
	7.0	6.2	3.7	29 %
	8.0	6.0	3.7	29 %
	9.0	5.5	3.5	27 %
	10.0	5.2	3.2	25 %
	11.0	5.1	2.5	19 %
	12.0	5.0	1.5	12 %
	13.0	5.0	0.7	5 %
	14.0	5.0	0.7	5 %
	14.5	5.0	0.7	5 %

SECCHI DISK (m): 3.3
BOTTOM DEPTH (m): 14.9
TIME: 1400

COMMENTS: A substantial dissolved oxygen deficit was present very early in the summer. A greater deficit would be expected later in the summer.

*Dissolved oxygen values are in mg/L


wetland
Wetland
CLEMENT POND
HOPKINTON
N
Youth
Camp
Aquatic Plant Distribution Map
0
.5
km

AQUATIC PLANT SURVEY

LAKE: CLEMENT POND TOWN: HOPKINTON DATE: 06/25/90

Key	PLANT NAME		ABUNDANCE
	GENERIC	COMMON	
N	Nymphaea	White water lily	Scattered
P	Pontederia cordata	Pickerelweed	Scattered
B	Brasenia schreberi	Water shield	Sparse
D	Decodon verticillatus	Swamp loosestrife	Scattered
Y	Nuphar	Yellow water lily	Sparse
e	Elodea nuttallii	Waterweed	Sparse
T	Typha	Cattail	Sparse
A	Peltandra virginica	Arrow arum	Scattered
U	Utricularia	Bladderwort	Sparse
W	Potamogeton	Pondweed	Sparse
S	Sparganium	Bur reed	Sparse
F	Nymphoides cordatum	Floating heart	Sparse
E	Eriocaulon septangulare	Pipewort	Sparse
f	Chlorophyceae	Filamentous green algae	Sparse
X		Bottom growth	Scattered

OVERALL ABUNDANCE: Scattered

GENERAL OBSERVATIONS:

1. Plants were scattered overall but were very common in the northern outlet cove and in the southwest inlet area. The outlet flows into a wetland.

2. Decodon was common along much of the shoreline in the northern cove.

3. Freshwater sponges were observed.